Spruce Budworm 1965
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BIOLOGICAL EVALUATION OF A SPRUCE BUDWORM INFESTATION IN THE BITTERROOT NATIONAL FOREST

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By
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Forest Pest Control Branch
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INTRODUCTION

A biological evaluation of a spruce budworm infestation was made in an area of 6,500 acres in the Bitterroot National Forest in 1965. This area, named Trapper Creek unit, has been selected by the Toxicology and Insecticide Evaluation Laboratory, Pacific Southwest Forest and Range Experiment Station, for pilot testing the insecticide Zectran on an operational basis. Spruce budworm has been active in the upper Bitterroot River drainage since about 1950. The first control project by aerial spraying in the Region was conducted in the Bitterroot in 1952. The Trapper Creek unit was sprayed with DDT in 1963 as part of a control project that included large areas in the upper Bitterroot. The budworm infestation in the upper Bitterroot drainage is persistent.

The biological evaluation in 1965 indicates that the infestation is moderately heavy and will continue at the same level in 1966.

This area appears to be well suited for pilot testing an insecticide because the timber stands are growing in sites where response to control is usually favorable.

see Environmental Factors

TECHNICAL INFORMATION

Causal agent.--Spruce budworm, Choristoneura fumiferana (Clem.).

Host tree attacked.--Douglas-fir, Pseudotsuga menziesii var. glauca.

Type of damage.--Foliar damage from larval feeding annually on current year's foliage. Repeated heavy defoliation severely weakens the infested trees and can cause some tree mortality.

Biological data.--An aerial survey in September which included all of the Bitterroot Forest showed that the defoliation level in the Trapper Creek unit ranged from light to heavy. In October, 22 samples of foliage were collected from Douglas-fir plots in the unit and sent to Missoula for analysis of spruce budworm egg masses and an evaluation of current and past defoliation.

The following table gives the results obtained from the plots:

Table 1.--Defoliation and spruce budworm egg masses from sample plots in the Trapper Creek unit, Bitterroot National Forest, 1965

Plot	M sq. in. of foliage	Current defoliation (percent)	Past defoliation	Current egg masses	Egg masses per M sq. in. of foliage
1	4.8	80	Heavy	75	15.6
2	6.4	80+	Heavy	197	30.8
3	5.8	60	Moderate	118	20.3
4	5.5	40	Light	47	8.5
5	6.1	30	Moderate	131	21.5
6	7.0	25	Light	110	15.7
7	5.3	65	Moderate	80	15.1
8	5.8	40	Moderate	113	19.5
9	3.9	60	Moderate	76	19.5
10	5.7	20	Light	16	2.8
11	6.2	20	Light	104	16.8
12	5.3	5	Light	55	10.4
13	5.3	35	Light	74	14.0
14	5.3	10	Light	83	15.7
15	5.0	25	Light	56	11.2
16	5.8	30	Light	66	11.4
17	5.3	10	Light	29	5.5
18	7.9	45	Moderate	126	15.9
19	7.2	20	Light	23	3.2
20	6.6	10	Light	27	4.1
21	7.3	30	Moderate	125	17.1
22	6.4	30	Light	136	21.2
		35			14.3 ± 1.4

Defoliation in 1965 from budworm feeding has not changed much from 1964. Egg masses were plentiful in 1965 and should provide an overwintering population of budworm sufficient to defoliate the area to about the same extent in 1966.

Egg parasitism by Trichograma sp. was 11 percent in these plots; this is the only area in the Region where egg parasites occurred in any significant numbers. The parasites will not reduce the budworm population much in 1966 but eggs in 1966 might be considerably reduced.

Environmental factors.--Douglas-fir stands in this unit are better than average for western Montana. There is little of the dry site, hard-to-control type encountered in central Montana. The unit is surrounded on three sides by infested Douglas-fir.

Extent of the outbreak.--This proposed pilot test unit contains 6,500 acres.

Location of the outbreak.--Trapper Creek unit is in the upper Bitterroot River drainage about 20 miles south of Hamilton (see attached map).

DISCUSSION

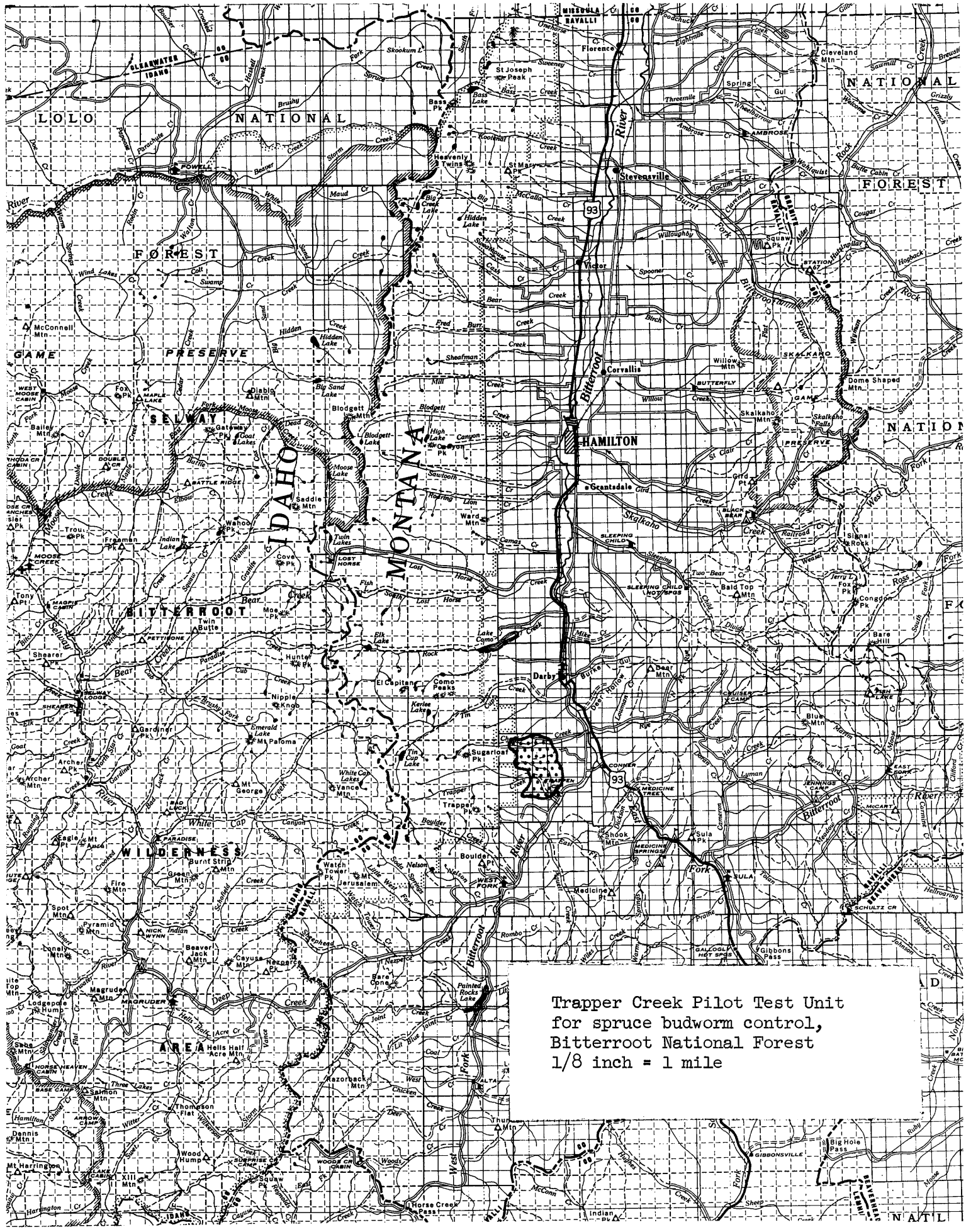
The agencies concerned with this unit are familiar with the problems of conducting the proposed pilot test.[1/]

Impact of control on other resources.--Care will be taken to avoid any serious impact on other resources. Because this test will be made to evaluate Zectran's effectiveness against budworm, side effects on other resources will be checked closely.

RECOMMENDATIONS

The insecticide Zectran has been recommended for the test in this area at the rate of 0.2 pound per acre.

1/ Karr, Raymond and David O. Scott. Study plan pilot test of Zectran for spruce budworm control, Bitterroot National Forest. Division of State and Private Forestry. This report will be processed and distributed on or before January 1, 1966.


Trapper Creek Pilot Test Unit
for spruce budworm control,
Bitterroot National Forest
1/8 inch = 1 mile